

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Michael Dunnam on September 30, 2009.

The application has been amended as follows:

In the claims:

1. (Currently Amended) A scheduling and routing system implemented on a processor, said system including an application program that is implemented on said processor for use in calculating delivery routes for delivering a consumable to customers via commercial delivery vehicles, comprising:

a delivery forecasting system implemented on said processor that consumption matches certain customers to other customers with similar attributes and that forecasts from the delivery profiles of the other customers with similar attributes and/or historical profiles of deliveries to said certain customers, when each said certain customer is anticipated to run out of inventory of the consumable; ~~and~~

an integrated inventory replenishment, scheduling and routing system implemented on said processor that generates a delivery route for a commercial delivery vehicle that prioritizes customers for delivery of said consumable based on risk of inventory depletion before delivery of more inventory of the consumable, said delivery route being generated based on (a) said forecasts and (b) variable parameters including road routing economics of making several deliveries in sequence to a plurality of said customers before replenishment of the commercial delivery vehicle; and

a cost trade-off function implemented on said processor that reflects the trade-off between the cost of delivery of the consumable and the cost associated with the risk of running out of the consumable on any given day, whereby a minimum of said cost trade-off function is used by said integrated inventory replenishment, scheduling and routing system as a criterion for selecting a day for customer delivery, said processor further calculating within a routing horizon for each customer a range of allowable days for delivery of the consumable, said range of allowable days being defined as a set of contiguous days within which the cost trade-off function values fall within a given tolerance of an optimal value.

3. (Currently Amended) A computer-implemented method of forecasting consumption and generating optimal delivery schedules for delivery of consumables to customers by commercial delivery vehicles, comprising the steps of:

~~the~~ a computer processing instructions for consumption matching a customer to other customers with similar attributes and forecasting ~~the~~ customer's consumption of the consumable from the delivery profiles of the other customers with similar attributes and/or historical delivery profiles for deliveries to said customer and, from the customer's forecasted consumption, forecasting when said customer is anticipated to run out of inventory of the consumable; ~~and~~

the computer processing instructions for generating a delivery route for a commercial delivery vehicle that prioritizes customers for delivery of said consumable based on risk of inventory depletion before delivery of more inventory of the consumable, said delivery route being generated based on (a) forecasts in said forecasting step and (b) variable parameters for minimizing cost for inventory replenishment of the consumable for individual deliveries by the commercial delivery vehicle, said variable parameters including road routing economics of making several deliveries in sequence to a plurality of said customers before replenishment of the commercial delivery vehicle; and

Comment [JA1]: There is no [[b]] in this paragraph

the computer processing instructions for implementing a cost trade-off function that reflects the trade-off between the cost of delivery of the consumable and the cost associated with the risk of running out of the consumable on any given day, whereby a minimum of said cost trade-off function is used as a criterion for selecting a day for customer delivery, said computer further calculating within a routing horizon for each customer a range of allowable days for delivery of the consumable, said range of allowable days being defined as a set of contiguous days within which the cost trade-off function values fall within a given tolerance of an optimal value.

8. (Currently Amended) A program storage device readable by a processor and storing thereon a program of instructions executable by said processor for forecasting consumption and generating optimal delivery schedules for delivery of consumables to customers by commercial delivery vehicles, said program of instruction causing said processor to:

consumption match a customer to other customers with similar attributes and to forecast the customer's consumption of the consumable from the delivery profiles of the other customers with similar attributes and/or historical delivery profiles for deliveries to said customer and, from the customer's forecasted consumption, forecasting when said customer is anticipated to run out of inventory of the consumable, and-

generate a delivery route for a commercial delivery vehicle that prioritizes customers for delivery of said consumable based on risk of inventory depletion before delivery of more inventory of the consumable based on (a) forecasts in said forecasting step and (b) variable parameters for minimizing cost for inventory replenishment of the consumable for individual deliveries by the commercial delivery vehicle, said variable parameters including road routing economics of making several deliveries in sequence to a plurality of said customers before replenishment of the commercial delivery vehicle;

implement a cost trade-off function that reflects the trade-off between the cost of delivery of the consumable and the cost associated with the risk of running out of the

Comment [JA2]: There is no [(b)] in this paragraph.

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consumable on any given day, whereby a minimum of said cost trade-off function is used as a criterion for selecting a day for customer delivery; and

calculate within a routing horizon for each customer a range of allowable days for delivery of the consumable, said range of allowable days being defined as a set of contiguous days within which the cost trade-off function values fall within a given tolerance of an optimal value.

13. (Currently Amended) A scheduling and routing system implemented on a processor, said system including an application program that is implemented on said processor for use in calculating delivery routes for providing periodically scheduled services to customers via commercial delivery vehicles, comprising:

a delivery forecasting system implemented on said processor that consumption matches certain customers to other customers with similar attributes and that forecasts from the delivery profiles of the other customers with similar attributes and/or historical profiles of deliveries of the periodically scheduled services to said certain customers when each said certain customer is anticipated to need the periodically scheduled services; ~~and~~

an integrated scheduling and routing system implemented on said processor that generates a delivery route for a commercial delivery vehicle that prioritizes customers for delivery of said services based on risk of needing the services before delivery of the periodically scheduled services, said delivery route being generated based on (a) said forecasts and (b) variable parameters including road routing economics of making several deliveries in sequence to a plurality of said customers before rerouting of the commercial delivery vehicle; and

a cost trade-off function implemented on said processor that reflects the trade-off between the cost of delivery of the consumable and the cost associated with the risk of running out of the consumable on any given day, whereby a minimum of said cost trade-off function is used by said integrated inventory replenishment, scheduling and

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routing system as a criterion for selecting a day for customer delivery, said processor further calculating within a routing horizon for each customer a range of allowable days for delivery of the consumable, said range of allowable days being defined as a set of contiguous days within which the cost trade-off function values fall within a given tolerance of an optimal value.

15. (Currently Amended) A computer-implemented method of providing periodically scheduled services to customers by commercial delivery vehicles, comprising the steps of:

the a computer processing instructions for consumption matching a customer to other customers with similar attributes and forecasting the customer's need for the services from the delivery profiles of the other customers with similar attributes and/or historical delivery profiles for deliveries of the periodically scheduled services to said customer and, from the customer's forecasted need, forecasting when said customer is anticipated to need the periodically scheduled services; and

the computer processing instructions for generating a delivery route for a commercial delivery vehicle that prioritizes customers for delivery of said services based on risk of needing the services before delivery of the periodically scheduled services, said delivery route being generated based on (a) said forecasts and (b) variable parameters including road routing economics of making several deliveries in sequence to a plurality of said customers before rerouting of the commercial delivery vehicle; and

the computer processing instructions for implementing a cost trade-off function that reflects the trade-off between the cost of delivery of the consumable and the cost associated with the risk of running out of the consumable on any given day, whereby a minimum of said cost trade-off function is used as a criterion for selecting a day for customer delivery, said computer further calculating within a routing horizon for each customer a range of allowable days for delivery of the consumable, said range of

Comment [JA3]: There is no [b] in this paragraph

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allowable days being defined as a set of contiguous days within which the cost trade-off function values fall within a given tolerance of an optimal value.

17. (Currently Amended) A program storage device readable by a processor and storing thereon a program of instructions executable by said processor for forecasting need for periodically scheduled services and generating optimal delivery schedules for delivery of the services to customers by commercial delivery vehicles, said program of instruction causing said processor to:

consumption match a customer to other customers with similar attributes and to forecast the customer's need for the services from the delivery profiles of the other customers with similar attributes and/or historical delivery profiles for deliveries of the periodically scheduled services to said customer and, from the customer's forecasted need, forecasting when said customer is anticipated to need provision of the periodically scheduled services, and-

generate a delivery route for a commercial delivery vehicle that prioritizes customers for delivery of said services based on risk of needing the services before delivery of the periodically scheduled services, said delivery route being generated based on (a) said forecasts and (b) variable parameters for minimizing cost for individual deliveries by the commercial delivery vehicle, said variable parameters including road routing economics of making several deliveries in sequence to a plurality of said customers before rerouting of the commercial delivery vehicle;

implement a cost trade-off function that reflects the trade-off between the cost of delivery of the consumable and the cost associated with the risk of running out of the consumable on any given day, whereby a minimum of said cost trade-off function is used as a criterion for selecting a day for customer delivery; and

calculate within a routing horizon for each customer a range of allowable days for delivery of the consumable, said range of allowable days being defined as a set of

contiguous days within which the cost trade-off function values fall within a given tolerance of an optimal value.

29. (Canceled)

30. (Currently Amended) The scheduling and routing system of claim 28 ~~29~~, wherein said processor is further programmed to calculate a total expected cost of delivery to each customer on every day of the planning horizon as a sum of the cost of delivery of the consumable and an expected out of stock cost for the consumable, whereby a day on which the total expected cost of delivery is a minimum is identified as an optimal delivery day.

32. (Canceled)

33. (Currently Amended) The scheduling and routing system of claim 31 ~~32~~, wherein said integrated inventory replenishment, scheduling and routing system assigns a routing string to each customer indicating the days of the routing horizon on which the consumable may be delivered to the customer.

34. (Currently Amended) The scheduling and routing system of claim 31 ~~33~~, wherein said integrated inventory replenishment, scheduling and routing system associates routing strings defining the range of allowable days for a customer to a delivery vehicle to be assigned a calculated delivery route.

Reasons for Allowance

The following is an examiner's statement of reasons for allowance:

Upon review of the evidence at hand, it is hereby concluded that the evidence obtained and made of record, alone or in combination, neither anticipates, reasonably teaches, nor renders obvious the below noted features of applicant's invention as the noted features amount to more than a predictable use of elements in the prior art. The allowable features include "a cost trade-off function implemented on said processor that reflects the trade-off between the cost of delivery of the consumable and the cost associated with the risk of running out of the consumable on any given day, whereby a minimum of said cost trade-off function is used by said integrated inventory replenishment, scheduling and routing system as a criterion for selecting a day for customer delivery, said processor further calculating within a routing horizon for each customer a range of allowable days for delivery of the consumable, said range of allowable days being defined as a set of contiguous days within which the cost trade-off function values fall within a given tolerance of an optimal value."

In addition to the above, the Examiner emphasizes the interrelation of the above distinguishing elements with the remainder of each respective claim element, and further notes that it is the interrelation that truly distinguishes Applicant's invention from the evidence at hand. Moreover, none of the evidence at hand teaches or suggests the combination of features claimed, nor does there exist an appropriate rationale for further modification of the evidence at hand.

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It is hereby asserted by the Examiner that, in light of the above and in further deliberation over all of the evidence at hand, that the claims are allowable as the evidence at hand does not anticipate the claims and does not render obvious any further modification of the references to a person of ordinary skill in the art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JASON B. DUNHAM whose telephone number is (571)272-8109. The examiner can normally be reached on M-F, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Smith can be reached on 571-272-6763. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason B Dunham/ 10/12/09
Primary Examiner, Art Unit 3625